REMARKS

I. CLAIM CHANGES

Some further changes were made in the independent claims 4 and 12 and dependent claim 10 to more clearly distinguish their subject matter from the cited prior art, especially the disclosures in Okita, et al.

The negative limitation added to both claims 4 and 12 is based on the disclosure in the applicant's originally filed specification on page 5, lines 15 to 22. At this point the applicants' specification states that form-shaping occurs in the cold state, i.e. in the cold-forming step, and that there are no further changes in shape after the cold-forming step.

Thus the surface improving treatment described in the last paragraph on page 8 of the applicants' originally filed specification must **not** change the shape or geometry of the roll bearing part or component, as explained on page 8, lines 14 to 16, of the originally filed specification.

Accordingly dependent claim 10 has been amended to state that the surface improving treatment does **not** change the finished shape of the roll bearing part or component. In other words, the grinding mentioned on page 8, line 17, must not change the shape or geometry of the article formed.

II. OBVIOUSNESS REJECTIONS

Claims 3 to 5, 10, and 12 were rejected under 35 U.S.C. 103 (a) over Okita, et al (US Patent 5,672,014 – US '014).

Claims 6 and 8 were rejected under 35 U.S.C. 103 (a) over Okita, et al, in view of ASM Handbook, Vol. 14.

The above changes in claims 4 and 12 have further clarified the negative limitations in independent claims 4 and 12. The above changes in claims 4, 10, and 12 further distinguish the claimed invention from the prior art, especially the disclosures in Okita, et al.

Okita, et al, discloses and claims rolling bearing parts including rolling elements and an inner and outer race made from steels that have a composition within certain ranges in claims 1 to 6. Okita, et al, do not claim methods of making roll bearing parts, so that the only source of information in Okita, et al, regarding methods of making roll bearing parts or components is the specification and abstract of Okita, et al. Because of that the description in Okita, et al, of the method of making the roll bearing parts or components does not need to be complete because only articles with particular compositions are claimed. Thus the statements in the specification regarding methods must be carefully considered in view of what was generally known in the prior art.

The abstract (last four lines) teaches selection of steel compositions so that the method of making the roll bearing parts can be optimized.

It is respectfully submitted that the specification of Okita, et al, from columns 1 to 40 does not establish a case of *prima facie* obviousness of the methods claimed in the independent claims 4 and 12 because the specification of Okita, et al, does **not** disclose or suggest the negative limitations that have been comparatively recently added to claims 4 and 12. These negative limitations are that hard-working does not take place **after** hardening, or **after** heat treating to perform the hardening. In other words, the roll bearing part or component is put in its final shape or form during a cold-working step prior to hardening or heat-treating to harden the steel part.

Furthermore it should also be emphasized that the term “then” limits the methods of claims 4 and 12 to a hardening step (by heat-treating) that is necessarily performed **after** the cold-forming in which the final predetermined shape of the product is attained.

Regarding the prior art described in the background section of US ‘014 column 1, lines 9 to 20, teaches that the bearing steels used to make the roll bearing parts are hardened and tempered. Also in column 1, lines 63 to column 2, line 11, US ‘014 teaches that both types of prior art steel compositions used as a starting point for making bearings require hardening and heat treatments. Carburizing is also necessary for some steels. One usual carbon steel, SCr420, used as a starting point, prior to steps such as cold forging, is **hardened** steel.

Column 2, lines 12 to 20, teaches that in the prior art methods described in US ‘014 grinding to shape the steel into the roll parts or components occurs after heat treatment.

The foregoing prior art descriptions in US ‘014 clearly show that the methods claimed in claims 4 and 12 with their negative limitations regarding hard-working after heat treating or hardening are not obvious from the prior art. Typically the prior art methods as explained on page 3, lines 1 to 3, of applicants’ specification include hardening or heat treatments to harden, which are performed **prior to** hard-working steps, such as milling, turning and grinding to shape the parts or components. Thus the applicants’ disclosures regarding the order of the hardening steps and the final shaping steps of the prior art are confirmed by the background section of US ‘014.

The steel compositions selected according to claims 4 and 12 further facilitate a claimed method in which the stress-raising hard-working steps, such as grinding to shape the article and turning or milling are eliminated **after** the hardening or heat treating steps, which are performed to harden the part or component. This provides a superior roll bearing part or component that has the improved properties described on page 4, lines 17 to 20, and on page 5, lines 4 to 11, of applicants’ specification.

Also the claimed method of applicants’ claims 4 and 12 is simpler and leads to considerable cost savings.

The method of applicants’ claims 4 and 12 is not obvious from the disclosures in US ‘014 because the method described in US ‘014 does **not** exclude shape-changing and hard-working steps **after** hardening or heat treating to harden the roll bearing part of component. Specifically column 11, lines 43 to

50, of US '014 clearly state that the inner and outer races for the bearing are formed by a method in which the steel is **first** hot forged and softened by heating and **then** subject to turning to form the shaped article.

The passage at column 3, lines 36 to 41, does teach that the rolling elements can be made by first cold forging and then grinding (in relation to page 3, last paragraph of the Office Action). However this teaching does not provide any disclosure regarding the order in which cold forging steps and heat treating or hardening steps are performed. Thus the teaching at column 3 regarding methods of making the rolling elements does not suggest the applicants' negative limitation in claims 4 and 12.

Column 7, lines 64 to 66, of US '014 does teach that the rolling elements undergo little deformation after heat treatment and that grinding is difficult. On the other hand, the temperatures of heat treatments and carbonitriding treatment are controlled to facilitate after-working by grinding. See column 23, lines 15 to 28, of US '014, which make it clear that Okita, et al, after-work the roll bearing parts **after** hardening and heat-treating by grinding. The statements related to "grindability" at this point make it absolutely clear that the roll bearing parts of Okita, et al, are subjected to extensive grinding to produce the final product.

Thus according to column 11 of US '014 shaping of the article by hard-working steps like milling or turning can be performed **after** heating or hardening. However shaping after heating is excluded by the negative limitation at the end of applicants' independent claims 4 and 12.

Okita, et al, contains teaching of doing the opposite from the inventive method, as it is now claimed in *amended* claims 4 and 12.

It is well established by many US judicial decisions that a prior art reference that teaches the opposite from the claimed invention should not be used to reject the claimed invention under 35 U.S.C. 103 (a). For example, see M.P.E.P. 2145. X. Also the Federal Circuit Court of Appeals has said:

> "That the inventor achieved the claimed invention by doing what those skilled in the art suggested should not be done is a fact strongly probative of nonobviousness." in ***Kloster Speedsteel AB v. Crucible Inc.,*** 230 U.S.P.Q. 81 (Fed. Cir. 1986), on rehearing, 231 U.S.P.Q. 160 (Fed. Cir. 1986).

Claims 4 and 12 have been amended to exclude hard-working steps, like milling and turning, which are performed **after** the hardening by heat treatment, from the claimed method. Okita, et al, only disclose prior art methods in which the final shape of the product is attained after the product is subjected to a grinding treatment in the case of both the rolling elements and the inner and outer races, which is particularly evidenced by the disclosures in columns 3 and 23 and in the section describing prior art in US '014.

Furthermore the negative limitations in applicants' amended claims 4 and 12, which result in the above-described advantages and benefits, are not disclosed or suggested in Okita, et al. These negative limitations are the result-effective limitations that provide the benefits of the claimed method.

In addition, the above changes in claim 10 have further clarified the surface improving treatment in dependent claim 10. The surface improving treatment is limited to surface improving treatments that do not change the shape or geometry of the finished product. This limitation is supported by the applicants' specification, as noted above, and limits any grinding that takes place to improving or smoothing the surface without changing the shape.

For the foregoing reasons and because of the changes in claims 4, 10, and 12, withdrawal of the rejection of claims 3 to 5, 10, and 12 under 35 U.S.C. 103 (a) over Okita, et al, is respectfully requested.

Furthermore withdrawal of the rejections of dependent claims 6 and 8 under 35 U.S.C. 103 (a) over Okita, et al, in view of the ASM Handbook Vol 14, is also respectfully requested because these dependent claims include the limitations of the independent claims.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,

Michael J. Striker,
Attorney for the Applicants
Reg. No. 27,233